

## THE CLAIMS

What is claimed is:

1        1. A TiW-selective composition comprising water and between about 5% and  
2        about 20% by weight of periodic acid, wherein the composition is effective in removing a  
3        TiW alloy and removing residues of etching of TiW alloy while removing a relatively small  
4        amount of Al, Cu, or an AlCu alloy, and wherein the pH of the composition is less than 7.

1        2. The composition of claim 1, wherein the composition is substantially free of  
2        hydrofluoric acid.

1        3. The composition of claim 1, wherein the pH of the composition is less than  
2        about 4.

1        4. The composition of claim 1, wherein the pH of the composition is less than  
2        about 2.

1        5. The composition of claim 1, wherein the composition contains periodic acid in  
2        an amount from about 7.5% to about 15% by weight of the composition.

1        6. The composition of claim 1, wherein the composition contains periodic acid in  
2        an amount from about 8% to about 12% by weight of the composition.

1        7. The composition of claim 1, wherein the composition contains periodic acid in  
2        an amount of about 10 % by weight of the composition.

1        8. A method of etching and cleaning a TiW alloy layer comprising:  
2                providing a substrate comprising an exposed TiW alloy layer;  
3                etching the TiW alloy by a method which results in formation of etching  
4                residue;

5 contacting the substrate with the composition of claim 1 for a time and at a  
6 temperature sufficient to cause the composition to remove at least a portion of the TiW alloy  
7 and substantially all of the etching residue from the substrate; and  
8 rinsing the substrate.

1                   9.        The method of claim 8, wherein the substrate further comprises an exposed  
2        AlCu alloy, wherein the specificity of removal of TiW to AlCu, in terms of etch rate, is at  
3        least about 3.

1           10. The method of claim 9, wherein the substrate further comprises an exposed  
2       AlCu alloy, wherein the specificity of removal of TiW to AlCu, in terms of etch rate, is at  
3       least about 5.

1           11. The method of claim 10, wherein the substrate further comprises an exposed  
2       AlCu alloy, wherein the specificity of removal of TiW to AlCu, in terms of etch rate, is at  
3       least about 7.

1                   12.     The method of claim 8, wherein the temperature at which the solution is used  
2     ranges from about 20°C to about 100°C.

1                   13. The method of claim 8, wherein the temperature at which the solution is used  
2                   ranges from about 30°C to about 40°C.

7 contacting the substrate with the composition of claim 1 for a time and at a  
8 temperature sufficient to substantially remove the residues from the substrate; and  
9 rinsing the substrate.

1                   15. The method of claim 14, wherein the temperature at which the solution is used  
2                   ranges from about 20°C to about 100°C.

1                   16. The method of claim 15, wherein the temperature at which the solution is used  
2                   ranges from about 30°C to about 40°C.